

REMARKS

Claims 1-56 are pending in this application and presently stand rejected. Claims 1, 31 and 41 are amended, without acquiescence or prejudice to pursue in a related application. No new matter has been added. Based on the above amendments and the following remarks, reconsideration and allowance of this application is respectfully requested.

Interview Summary

The Examiner is thanked for meeting with the undersigned on September 18, 2007 to conduct an interview. During the interview, Applicants' attorney explained the difference between the claimed invention and the cited references. No agreement has been reached.

Claim Rejections-35 U.S.C. §103

Claims 1-7, 9-17, 21, 24-29, 26-29, 31-37, and 49-50 have been rejected under 35 USC 103(a) as being unpatentable over Marques-Silva ("GRASP: A Search Algorithm for Propositional Satisfiability"), in view of Moskewicz ("Chaff: Engineering an Efficient SAT Solver").

As amended, claim 1 recites at least the following claim elements (Emphasis added):

(a) organizing a plurality of clauses in a satisfiability problem as a chronologically ordered structure comprising a top and a bottom, wherein newly deduced conflict clauses are added to the top of the structure, and maintaining individual activity counters for variables in the plurality of clauses, wherein the individual activity counters are incremented only based upon clauses that are involved in a conflict where a clause C is involved in the conflict if during Boolean Constraint Propagation, the clause C becomes a unit and a deduced assignment is made to satisfy C which leads to the conflict;

Applicants respectfully submit that the pending claims are not rendered obvious by the combination of Marques-Silva and Moskewicz, since the references taken together do not disclose or suggest all of the claim elements. In particular, Applicants respectfully note that the combination of Marques-Silva and Moskewicz do not disclose at least the claimed elements "maintaining individual activity counters for variables in the plurality of clauses, wherein the individual activity counters are

incremented only based upon clauses that are involved in a conflict where a clause C is involved in the conflict if during Boolean Constraint Propagation, the clause C becomes a unit and a deduced assignment is made to satisfy C which leads to the conflict.”

1. Applicants acknowledge page 3 of the Office Action, which states that Marques-Silva does not teach maintaining individual activity counters for variables in the plurality of clauses, wherein the individual activity counters are based upon clauses involved with a conflict. Since Marques-Silva does not disclose individual activity counters, this reference cannot disclose “maintaining individual activity counters for variables in the plurality of clauses, wherein the individual activity counters are incremented only based upon clauses that are involved in a conflict” as is presently claimed where the “clause C is involved in the conflict if during Boolean Constraint Propagation, the clause C becomes a unit and a deduced assignment is made to satisfy C which leads to the conflict.”

Applicants respectfully suggest that Moskewicz does not make up for this deficiency in Marques-Silva. Moskewicz is directed to an approach for implementing a SAT solver using a variant of the Davis-Putnam (DP) proof procedure in which all variables are examined (See pseudocode at page 530, right column of Moskewicz). With regard to maintenance of activity counters, Moskewicz does not state that individual activity counters are incremented only based upon clauses involved with a conflict, as presently claimed (See page 532, left column of Moskewicz which refers to counters generally for “clauses”, with no specific reference to “conflict clauses”).

In fact, to the extent Moskewicz even discusses literal counts with respect to conflict clauses, the Office Action at page 4 acknowledges that Moskewicz explicitly states that the conflict clauses “dominate” the problem in terms of literal count -- and explicitly does not state that the literal count is only incremented based upon conflict clauses. To clarify this in the claims, claim 1 has been amended to recite “the individual activity counters are incremented only based upon clauses that are involved in a conflict where a clause C is involved in the conflict if during Boolean Constraint Propagation, the clause C becomes a unit and a deduced assignment is made to satisfy C which leads to the conflict.”

For at least these reasons, Applicants respectfully submit that claim 1 is allowable over the combination of Marques-Silva and Moskewicz. For at least this same reason, Applicants submit that independent claims 31 and 41 are allowable as well. Therefore, Applicants respectfully submit that dependent claims 2-30, 32-40, and 42-56 are allowable for at least the same reason.

2. Claim 25 has been rejected under 35 USC 103(a) as being unpatentable over Marques-Silva (“GRASP: A Search Algorithm for Propositional Satisfiability”), in view of Bayardo (“Using CSP Look-Back Techniques to Solve Real-World SAT Instances”). As noted above, Marques-Silva fails to disclose the claimed element of “the individual activity counters are incremented only based upon clauses that are involved in a conflict where a clause C is involved in the conflict if during Boolean Constraint Propagation, the clause C becomes a unit and a deduced assignment is made to satisfy C which leads to the conflict.” Bayardo does not make up for the deficiencies of Marques-Silva, since Bayardo does not disclose or indeed even use the term “activity counter” at all.

3. Claims 54-56 have been rejected under 35 USC 103(a) as being unpatentable over Marques-Silva in view of Bayardo and further in view of Biere (“Symbolic Model Checking Using SAT Procedures Instead of BDDs”).

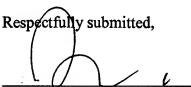
As stated above, neither Marques-Silva, Moskewicz, nor Bayardo disclose or suggest the claimed element of individual activity counters incremented only based upon clauses that are involved with a conflict.” Biere does not make up this deficiency in Marques-Silva, Moskewicz, and Bayardo. Biere is directed to applications of propositional decision procedures for hardware verification, using the Sato implementation of DP and the PROVER approach based on Stallmark’s method. However, Biere does not describe or suggest in any way the use of individual activity counters based upon conflict clauses, as is presently claimed. As such, the combination of Marques-Silva, Bayardo, and Biere does not render the pending claims obvious.

CONCLUSION

Based on the foregoing, it is believed that, with entry of this amendment, all claims are now allowable and a Notice of Allowance is respectfully requested. If the Examiner has any questions or comments regarding this amendment, the Examiner is respectfully requested to contact the undersigned at (650) 849-4870.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Bingham McCutchen's Deposit Account No. 50-4047, referencing billing number 7031042001. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Bingham McCutchen's Deposit Account No. 50-4047, referencing billing number 7031042001.

Respectfully submitted,



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